



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,812	10/07/2003	Ramesh Varadaraj	RV-0319	4779

7590 08/31/2005

EXXONMOBIL RESEARCH AND ENGINEERING COMPANY  
P.O. Box 900  
Annandale, NJ 08801-0900

EXAMINER
----------

WEBB, GREGORY E

ART UNIT	PAPER NUMBER
----------	--------------

1751

DATE MAILED: 08/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/680,812	VARADARAJ ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Gregory E. Webb	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 August 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>080404</u> .                                                              | 6) <input type="checkbox"/> Other: _____                                    |

*8/23/05*

## DETAILED ACTION

### *Claim Objections*

Claims 1-15 are objected to because of the following informalities: The applicant has used the term "amid" to describe their surfactant. There is no such group of chemical called "amid." Based on the specification, the applicant refers to commercial surfactants called "Ethomid." "Ethomid" is a tradename for a class of chemicals called "amides." It is therefore suggested that the applicant instead use the term "amide" both in the claims and specification. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

Art Unit: 1751

reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Varadaraj et al (US 6,869,706B2).

Concerning the fuel cell, Varadaraj teaches the following:

The emulsion compositions of the present invention can be used for start-up of a reformer of a fuel cell system. In a preferred embodiment the emulsion compositions can be used for start-up of a reformer of an improved fuel cell system described hereinafter. The improved fuel cell system comprises a convention fuel cell system to which a start-up system is operably connected. A conventional fuel cell system and the improved fuel cell system are described below.(see cols 1-2)

Concerning the emulsion and the hydrocarbon, Varadaraj teaches the following:

A hydrocarbon-in-water emulsion is one where hydrocarbon droplets are dispersed in water. A water-in-hydrocarbon emulsion is one where water droplets are dispersed in hydrocarbon. Both types of emulsions require appropriate surfactants to form stable emulsions of the desired droplet size distribution. If the average droplet sizes of the dispersed phase are less than about 1 micron in size, the emulsions are generally termed micro-emulsions. If the average droplet sizes of the dispersed phase droplets are greater than about 1 micron in size, the emulsions are generally termed macro-emulsions. A hydrocarbon-in-water macro or micro

Art Unit: 1751

emulsion has water as the continuous phase. A water-in-hydrocarbon macro or micro emulsion has hydrocarbon as the continuous phase. A bicontinuous emulsion is an emulsion composition wherein hydrocarbon-in-water and water-in-hydrocarbon emulsions coexist as a mixture. By "coexist as a mixture" is meant that the microstructure of the emulsion fluid is such that regions of hydrocarbon-in-water intermingle with regions of water-in-hydrocarbon. A bicontinuous emulsion exhibits regions of water continuity and regions of hydrocarbon continuity. A bicontinuous emulsion is by character a micro-heterogeneous biphasic fluid.(see col. 2)

Concerning the surfactant-A, Varadaraj teaches the following:

consisting of alkoxyated alkyl alcohols, alkoxyated alkyl mono esters, alkoxyated alkyl diesters and mixtures thereof, and represented by the respective formula (see claim 1)

Concerning the claimed alcohol, Varadaraj teaches the following:

2. The fuel cell system of claim 1 wherein the bicontinuous emulsion further comprises up to 20 wt % alcohol based on the total weight of said emulsion wherein said alcohol is selected form the group consisting of methanol, ethanol, n-propanol, iso-propanol, n-butanol, sec-butyl alcohol, tertiary butyl alcohol, n-pentanol, ethylene glycol, propylene glycol, butyleneglycol and mixtures thereof.(see claim 2)

Concerning the preferred hydrocarbon, Varadaraj teaches the following:

The hydrocarbon component of the emulsion composition of the instant

Art Unit: 1751

invention is any hydrocarbon boiling in the range of 30.degree. F. (-1.1.degree. C.) to 500.degree. F. (260.degree. C.), preferably 50.degree. F. (10.degree. C.) to 380.degree. F. (193.degree. C.) with a sulfur content less than about 120 ppm and more preferably with a sulfur content less than 20 ppm and most preferably with a no sulfur.

Hydrocarbons suitable for the emulsion can be obtained from crude oil refining processes known to the skilled artisan. Low sulfur gasoline, naphtha, diesel fuel, jet fuel, kerosene are non-limiting examples of hydrocarbons that can be utilized to prepare the emulsion of the instant invention. A Fisher-Tropsch derived paraffin fuel boiling in the range between 30.degree. F. (-1.1.degree. C.) and 700.degree. F. (371.degree. C.) and, more preferably, a naphtha comprising C.sub.5 -C.sub.10 hydrocarbons can also be used.(see col. 4, lines 26-40)

Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Varadaraj (US6736867).

Concerning the fuel cell, Varadaraj teaches the following:

The emulsion compositions of the present invention can be used for start-up of a reformer of a fuel cell system. In a preferred embodiment the emulsion compositions can be used for start-up of a reformer of an improved fuel cell system described hereinafter. The improved fuel cell

Art Unit: 1751

system comprises a convention fuel cell system to which a start-up system is operably connected. A conventional fuel cell system and the improved fuel cell system are described below.(see cols. 1-2)

Concerning the emulsion and the hydrocarbon, Varadaraj teaches the following:

A hydrocarbon-in-water emulsion is one where hydrocarbon droplets are dispersed in water. A water-in-hydrocarbon emulsion is one where water droplets are dispersed in hydrocarbon. Both types of emulsions require appropriate surfactants to form stable emulsions of the desired droplet size distribution. If the average droplet sizes of the dispersed phase are less than about 1 micron in size, the emulsions are generally termed micro-emulsions. If the average droplet sizes of the dispersed phase droplets are greater than about 1 micron in size, the emulsions are generally termed macro-emulsions. A hydrocarbon-in-water macro or micro emulsion has water as the continuous phase. A water-in-hydrocarbon macro or micro emulsion has hydrocarbon as the continuous phase. A bicontinuous emulsion is an emulsion composition wherein hydrocarbon-in-water and water-in-hydrocarbon emulsions coexist as a mixture. By "coexist as a mixture" is meant that the microstructure of the emulsion fluid is such that regions of hydrocarbon-in-water intermingle with regions of water-in-hydrocarbon. A bicontinuous emulsion exhibits regions of water continuity and regions of hydrocarbon continuity. A bicontinuous emulsion is by character a micro-heterogeneous biphasic fluid.(see col. 4)

Art Unit: 1751

Concerning the ethoxylated alkyl amid, Varadaraj teaches the following:

ethoxylated alkyl amines, ethoxylated alkyl diamines, ethoxylated alkyl amides and mixtures thereof, represented by the respective formulae  
##STR5##(see claim 1)

Concerning the claimed alcohol, Varadaraj teaches the following:

14. The bicontinuous emulsion of claim 13 further comprising up to 20 wt % alcohol based on the total weight of the said emulsion wherein said alcohol is selected from the group consisting of methanol, ethanol, n-propanol, iso-propanol, n-butanol, sec-butyl alcohol, tertiary butyl alcohol, n-pentanol, ethylene glycol, propylene glycol, butyleneglycol and mixtures thereof.(see claim 14)

Concerning the preferred hydrocarbon, Varadaraj teaches the following:

The hydrocarbon component of the emulsion composition of the instant invention is any hydrocarbon boiling in the range of 30.degree. F. (-1.1.degree. C.) to 500.degree. F. (260.degree. C.), preferably 50.degree. F. (10.degree. C.) to 380.degree. F. (193.degree. C.) with a sulfur content less than about 120 ppm and more preferably with a sulfur content less than 20 ppm and most preferably with a no sulfur.

Hydrocarbons suitable for the emulsion can be obtained from crude oil refining processes known to the skilled artisan. Low sulfur gasoline, naphtha, diesel fuel, jet fuel, kerosene are non-limiting examples of hydrocarbons that can be utilized to prepare the emulsion of the instant



Art Unit: 1751

invention. A Fisher-Tropsch derived paraffin fuel boiling in the range between 30.degree. F. (-1.1.degree. C.) and 700.degree. F. (371.degree. C.) and, more preferably, a naphtha comprising C5-C10 hydrocarbons can also be used.(see col. 4, lines 28-43)

Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Varadaraj (US 2003/0162061).

Varadaraj teaches claim 7 a method of making an emulsion containing the hydrocarbon (see also par. 018), water, and claimed surfactant mixture (see par. 020 and 021).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1751

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'G. Webb', is written over a horizontal line.

Gregory E. Webb  
Primary Examiner  
Art Unit 1751

gew